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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,954	08/28/2003	Tae-Kyu Choi	P-0533	6257

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EXAMINER	
CAO, HUEDUNG X	
ART UNIT	**PAPER NUMBER**
2821	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,954	CHOI, TAE-KYU	
	Examiner	Art Unit	
	Huedung X Cao	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/28/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by PATEL (5,828,339).

As per claim 1, Patel teaches the claimed "active antenna system of a radio communication terminal" comprising: "a directional antenna that transmits and receives an RF signal to and from a base station through a radio link" (Patel, the transmission and reception processing stages; figures 7-8); and "an amplifying unit integrated on one board together with the directional antenna and amplifying and filtering the RF signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156).

Claim 2 adds into claim 1 "the amplifying unit is integrated at an upper portion of an opposite side of the side where the directional antenna is formed" which Patel teaches in the enclosing of the amplifying unit in the modem board and circuitry 232 and 234 at the opposite side of the directional antenna's radiator elements 220 and 224 (figure 11; column 10, lines 28-45).

As per claim 22, Patel teaches the claimed "active antenna system of a radio communication terminal" comprising: "an antenna that transmits and receives a communication signal to and from a communication node through a communication link" (Patel, the transmission and reception processing stages; figures 7-8); and "and an amplifying unit integrated on one board together with the antenna and amplifying and filtering the communication signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156).

As per claim 23, Patel teaches the claimed "radio communication method" comprising: "transmitting and receiving a communication signal in an antenna to and from a communication node through a communication link" (Patel, the transmission and reception processing stages; figures 7-8); and "amplifying and filtering the communication signal in an amplifying unit integrated on one board together with the antenna" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over PATEL (5,828,339) in view of GOLDINGER et al. (6,812,824).

Claim 3 adds into claim 1 the structure of the amplifying unit which Patel does not explicitly teach. However, Goldinger teaches that such structure of the amplifying unit is well known in the art; specifically, Goldinger teaches the amplifying unit comprises: "a plurality of duplexers that separates a transmission path and a reception path of an RF signal" (Goldinger, the diplexers in figure 14 each of which acts, as the diplexer 618 of figure 6, as a duplexer for connecting a transmitter and a receiver to a common antenna; column 11, lines 4-9, 60-62); a sending end amplifying/filtering unit that amplifies and filters a transmitted RF signal (Goldinger, power amp 703, Tx bandpass filter 704); a receiving end amplifying/filtering unit that amplifies and filters a received RF signal (Goldinger, power amp 708, Tx bandpass filter 707); and a bias unit that separates an RF signal and a DC power inputted through a transmission line connected to a radio communication terminal (Goldinger, Bias Tee 906, 907; column 11, lines 18-30, 59-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit as claimed because such amplifying unit provides the separation of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 9-20).

Claim 4 adds into claim 3 "the amplifying unit further comprises a closed loop control circuit that detects a transmission output and generating/outputting a control signal" which Patel does not explicitly teach. However, Goldinger teaches that such "closed loop control circuit" is well known in the art (Goldinger, the microprocessor Tx control signals 610, 615 from the microprocessor 1001; column 10, lines 43-67). It

would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit using a transmission control signal as claimed because such transmission control signal provides the transmitted signals with a proper power levels and frequency range to perform the transmitting function of the antenna (Goldinger, column 9, lines 25-34).

Claim 5 adds into claim 4 "the closed loop control circuit comprises: a coupling unit that branches a transmission output from a final end of the sending end amplifying/filtering unit; and a detection controller that detects a strength of power of the branched transmission output and generates a gain control signal" which Patel does not explicitly teach. However, Goldinger teaches that such closed loop control circuit is well known; specifically, "a coupling unit that branches a transmission output from a final end of the sending end amplifying/filtering unit" (Goldinger, the directional coupler 616, column 10, lines 60-64); and "a detection controller that detects a strength of power of the branched transmission output and generates a gain control signal" (Goldinger, the transmitting signal test 617 and the gain control signal 615; figure 6 and column 10, line 61 to column 11, line 3). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit using a transmitting power control as claimed because such transmitting power control provides the transmitted signals with a proper power levels to perform the transmitting function of the antenna (Goldinger, column 9, lines 25-34).

Claim 6 adds into claim 3 "a band pass filter that passes only a signal of a specific band" which Patel teaches in the bandpass filters 132, 140, 152, 156 (figures 7 and 8)

Claim 7 adds into claim 6 "the band pass filter separates a control signal" which Patel teaches in the embedded overhead control signal going through the bandpass filters 132, and 140 (column 8, lines 34-59).

As per claim 8, Patel teaches the claimed "active antenna system of a radio communication terminal" comprising: "a directional antenna that transmits and receives an RF signal to and from a base station" (Patel, the transmission and reception processing stages; figures 7-8); and "a sending end amplifying/filtering unit that amplifies and filters an RF signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156); "a receiving end amplifying/filtering unit that amplifies and filters a reception RF signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156). It is noted that Patel does not explicitly "a duplexer" to separate the transmitting signal and the receiving signal using a common antenna as claimed. However, Goldinger teaches that such structure including a duplexer is well known in the art; specifically, Goldinger teaches the amplifying unit comprises: "a plurality of duplexers that separates a transmission path and a reception path of an RF signal" (Goldinger, the diplexers in figure 14 each of which acts, as the diplexer 618 of figure 6, as a duplexer for connecting a transmitter and a receiver to a

common antenna; column 11, lines 4-9, 60-62); a sending end amplifying/filtering unit that amplifies and filters a transmitted RF signal (Goldinger, power amp 703, Tx bandpass filter 704); a receiving end amplifying/filtering unit that amplifies and filters a received RF signal (Goldinger, power amp 708, Tx bandpass filter 707); a closed loop control circuit that generates a control signal according to power of a transmission RF signal outputted from a sending end amplifying/filtering unit (Goldinger, the microprocessor Tx control signals 610, 615 from the microprocessor 1001; column 10, lines 43-67); and a bias unit that separates an RF signal and a DC power inputted through a transmission line connected to a radio communication terminal (Goldinger, Bias Tee 906, 907; column 11, lines 18-30, 59-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit including a duplex as claimed because such amplifying unit provides the separation of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 9-20).

Claim 9 adds into claim 8 "the duplexer separates a transmission path and a reception path of an RF signal at both ends of the sending end amplifying/filtering unit and the receiving end amplifying/filtering unit" which Patel does not explicitly teach. However, Goldinger teaches such duplexer is well known in the art (Goldinger, the diplexers in figure 14 each of which acts, as the diplexer 618 of figure 6, as a duplexer for connecting a transmitter and a receiver to a common antenna; column 11, lines 4-9, 60-62). It would have been obvious to a person of ordinary skill in the art at the time the

invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit including a duplex as claimed because such amplifying unit provides the separation of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 10 adds into claim 8 "a plurality of amplifiers that amplifies a transmission RF signal and a reception RF signal" (Patel, the amplifiers 130, 134, 138, 154, 158; figures 7-8); a filter that filters each signal between amplifiers (Patel, the bandpass filters 132, 156); and a power supply unit that supplies power to each amplifier (Patel, the power supply 44 (column 5, lines 15-28).

Claim 11 adds into claim 10 "the power supply unit supplies a DC power transmitted from the bias unit" which Patel does not explicitly teach. However, Goldinger teaches such "supplied DC power transmitted from the bias unit" is well known in the art (Goldinger, Bias Tee 906, 907; column 11, lines 18-30, 59-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's power supply as claimed because such power supply provides the power drive for the amplifiers of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 12 adds into claim 8 "the receiving end amplifying/filtering unit includes a variable amplifier that amplifies a reception RF signal as much as a variable gain according to a control signal" which Patel does not explicitly teach. However, Goldinger teaches such variable gain amplifier is well known in the art (Goldinger, column 11, lines

40-44 and 56-59; the variable gain to drive the signal to a proper level by the processor 1001 of figure 6). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's system as claimed because such variable gain amplifier provides the signal a proper level to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 13 adds into claim 8 a coupling unit that branches a transmission output from a final end of the sending end amplifying/filtering unit (Patel, figure 7, the transmission of the Tx signal); and a detection controller that generates a control signal according to a strength of power of the branched transmission output and applying the control signal to the variable gain amplifier which Patel does not explicitly teach. However, Goldinger teaches such variable gain amplifier is well known in the art (Goldinger, column 11, lines 38-44 and 56-59; the variable gain to drive the signal to a proper level from the processor 1001). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's system as claimed because such variable gain amplifier provides the signal a proper level to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 14 adds into claim 13 "the control signal makes the transmission output and the gain of the variable gain amplifier to be proportional to each other" which Patel does not teach. However, given Goldinger's variable gained signal output from the power amplifier 703 going directly to the transmitting antenna 705, the transmission output and the gain of the variable gain amplifier are proportional to each other. It

would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's system as claimed because such proportionality of variable gain amplifier and the transmission output provides the signal a proper level to perform the function of the antenna (Goldinger, column 9, lines 25-34).

As per claim 15, Patel teaches the claimed "active antenna system of a radio communication terminal" comprising: "a directional antenna that transmits and receives an RF signal to and from a base station" (Patel, the transmission and reception processing stages; figures 7-8); "a sending end amplifying/filtering unit that amplifies and filters an RF signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156); "a receiving end amplifying/filtering unit that amplifies and filters a reception RF signal" (Patel, the integrated directional antenna includes the amplifiers 130, 134, 138, 154, 158; the band-pass filters 132, 140, 152, 156). It is noted that Patel does not explicitly "a bias unit that separates an RF signal, a DC power and a control signal transmitted from the radio communication terminal through a transmission line" as claimed. However, Goldinger teaches that such structure including a bias is well known in the art (Goldinger, Bias Tee 906, 907; column 11, lines 18-30, 59-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit including a bias unit as claimed because such amplifying unit provides the separation of the received

and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 9-20).

Claim 16 adds into claim 15 "a band pass filter that passes only a control signal among signals transmitted through the transmission line" which Patel teaches in the bandpass filters 132, 140, 152, 156 (column 8, lines 51-67).

Claim 17 adds into claim 15 "the sending end amplifying/filtering unit and the receiving end amplifying/filtering unit are connected to a duplexer separating a transmission path and a reception path at both ends" which Patel does not explicitly teach. However, Goldinger teaches such duplexer is well known in the art (Goldinger, the diplexers in figure 14 each of which acts, as the diplexer 618 of figure 6, as a duplexer for connecting a transmitter and a receiver to a common antenna; column 11, lines 4-9, 60-62). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's amplifying unit including a duplex as claimed because such amplifying unit provides the separation of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 18 adds into claim 15 "a plurality of amplifiers that amplifies a transmission RF signal and a reception RF signal" (Patel, the amplifiers 130, 134, 138, 154, 158; figures 7-8); a filter that filters each signal between amplifiers (Patel, the bandpass filters 132, 156); and a power supply unit that supplies power to each amplifier (Patel, the power supply 44 (column 5, lines 15-28).

Claim 19 adds into claim 18 "the power supply unit supplies a DC power transmitted from the bias unit" which Patel does not explicitly teach. However, Goldinger teaches such "supplied DC power transmitted from the bias unit" is well known in the art (Goldinger, Bias Tee 906, 907; column 11, lines 18-30, 59-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's power supply as claimed because such power supply provides the power drive for the amplifiers of the received and transmitted signals with a proper power levels to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 20 adds into claim 15 "the sending end amplifying/filtering unit and the receiving end amplifying/filtering unit include a variable gain amplifier that amplifies a reception RF signal as much as a variable gain according to a control signal" which Patel does not explicitly teach. However, Goldinger teaches such variable gain amplifier is well known in the art (Goldinger, column 11, lines 40-44 and 56-59; the variable gain to drive the signal to a proper level by the processor 1001 of figure 6). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Goldinger, to configure Patel's system as claimed because such variable gain amplifier provides the signal a proper level to perform the function of the antenna (Goldinger, column 9, lines 25-34).

Claim 21 adds into claim 3 "a band pass filter that passes only a control signal among signals transmitted through the transmission line" which Patel teaches in the bandpass filters 132, 140, 152, 156 (column 8, lines 51-67).

Claim 24 claims a method based on the system of claim 3; therefore, it is rejected for the same reason.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chang et al. (USP 6791495) teach a modular mobile terminal for a satellite system is disclosed in which the satellite system has a ground station and a network such as a telephone network coupled to the ground station.

Reed (USP 6823180) teaches A method within and wireless communications unit (WCU) arranged to operate in a fixed wireless network including a transceiver for receiving and transmitting signals within the network; an antenna system having adjustable visibility to the fixed wireless network; and a controller, coupled to the transceiver and the antenna system, to control the transceiver and to adjust the visibility of the antenna system such that the visibility of the WCU to the fixed wireless network is adjustable.

Inquires

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huedung Cao whose telephone number is (571) 272-1939.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Huedung Cao
Patent Examiner